

# MILITARY SPENDING AND THE ECONOMY

**Jakub Odehnal**<sup>1</sup>

e-mail: jakub.odehnal@unob.cz

**Jiří Neubauer**

e-mail: jiri.neubauer@unob.cz

University of Defence in Brno, Czech Republic

<sup>1</sup> Corresponding author.

**Abstract.** This paper employs the correlation analyses to investigate the relationship between selected economic determinants of military spending and the level of military expenditures for each of the 27 NATO countries over the period 1993-2014. The findings indicate that there is very little uniformity in the economic factors that determine each country's military expenditures.

**Key words:** military spending, economic determinants, correlation analysis.

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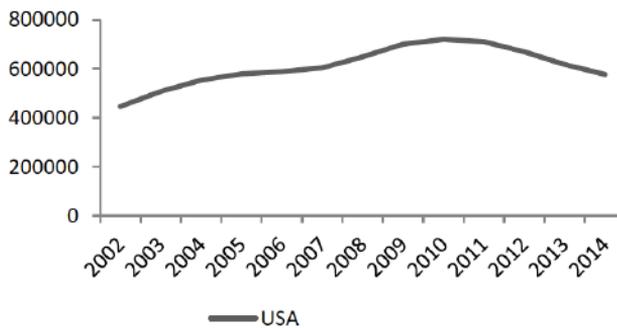
## Introduction

Terrorist attacks on the USA in 2001 changed the perception of potential terrorist attacks threat as one of the factors influencing the amount of military spending. Thus, events directly connected with this attack influenced military expenditure of the USA as well as a number of allied states. The analysis of military spending is a subject of a number of empirical studies, in which the military spending is expressed in total, or as a part of the Gross Domestic Product (further on GDP). Figures 1-6 illustrate the development of military spending of the analysed NATO member states (excluding Iceland), from which the dominant expenditure of the USA (where the military expenditure has always been high) is obvious.

In Figure 1 illustrating the development of military spending of the USA after 2001, a significant increase in expenditure caused especially by military troops' participation in the war in Iraq and Afghanistan (Operation Iraqi Freedom, Operation Enduring Freedom) can be observed. Thus, determinants of military expenditure after 2001 were based on political goals of Bush's administration lying in reaching victory in the global war against terrorism and in the US armed forces transformation for the needs of new conflicts at the beginning of the 21<sup>st</sup> century. The increase of the total amount of military expenditure in 2002, which is apparent in Figure 1, has started a significant debate on the

need of military expenditure increase and its relation to budget deficits (the budget surplus of the late 20<sup>th</sup> century in the amount of almost 125 billion dollars slumped into a deficit of 427 billion dollars in 2005 (3.5% GDP) and the federal debt grew from 5.6 trillion dollars up to over 8 trillion dollars in 2005 (over 60% GDP). The increase in military expenditure of the USA has been significantly slowed by Obama's administration declaring reduction of the number of military troops deployed in foreign missions. At the same time, there were also decisions made about finishing some projects dealing with weapon systems modernization and purchasing military technique (e.g. F-22, transport aircrafts C-17, purchasing helicopters VH-71, the acquisition and modernization of which function as one of the long-term factors influencing the amount of American military expenditure (Sköns et al. 2003, 2004, 2013; Stalenheim et al. 2008).

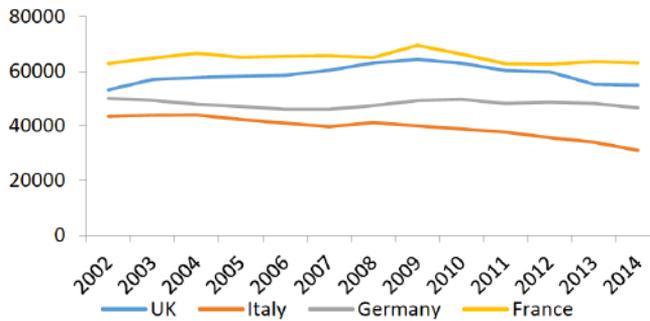
Figure 1. Trends in military expenditure in USA (in billion \$, at constant 2011 prices)



Source: SIPRI 2015.

The period after terrorist attacks on the United States generated a requirement for increasing the military expenditure of the USA approved by the public who is afraid of other potential attacks on the USA. Similar approving opinion of the majority of the public with increasing the military expenditure of European countries after 2001 was not accepted by European countries and there was a lot of public pressure especially on West European countries to reduce the military expenditure.

Figure 2. Trends in military expenditure in UK, Italy, Germany and France (in billion \$, at constant 2011 prices)

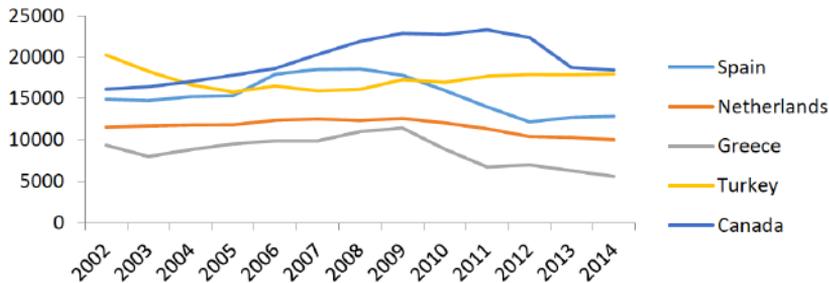


Source: SIPRI 2015.

Military expenditure of Great Britain was influenced by aims and recommendations formulated in the Strategic Defence Review (SDR), a document planning to increase the military expenditure by 1.2%. The fiscal factor influencing the British military expenditure was especially the increasing budget deficit and the new government priority to realize the fiscal policy aimed at “civilian” budget expenditure. The growing deficit of national budgets, as well as the consequences of the economic crisis, belongs to significant economic determinants of the European countries’ military expenditure.

The French economy is suffering from the state budget deficits which are contrary to the accepted rules of the so called Stability and Growth Pact. Those deficits influence the amount of French military expenditure so much that French politicians have suggested excluding the defence investments from the state budget deficit calculations within the Stability and Growth Pact realization. Apart from these fiscal factors, the French military expenditure was influenced by the process of professionalization of the armed forces or by participation of military troops in foreign missions. Like the fiscal development influence on military expenditure in France after 2001, the state budget deficit in Germany had a similar influence on military expenditure, the amount of which has for a long time been under the recommended level of 2% of the Gross Domestic Product (Sköns et al. 2003, 2004, 2013; Stalenheim et al. 2008). In spite of the reduction of Turkish expenditure after 2002, Turkey still belongs to the countries with the highest military expenditure in the world. The change of the Turkish foreign policy after 2002 is one of the political factors influencing the amount of the Turkish military expenditure. Policy called Zero problems of neighbours, along with the documents of the 2000 Defence White Paper and the National Security Policy Document, thus presents a significant reduction in the risk of an armed conflict with the neighbouring countries.

Figure 3. Trends in military expenditure in Spain, Netherlands, Greece, Turkey and Canada (in billion \$, at constant 2011 prices)

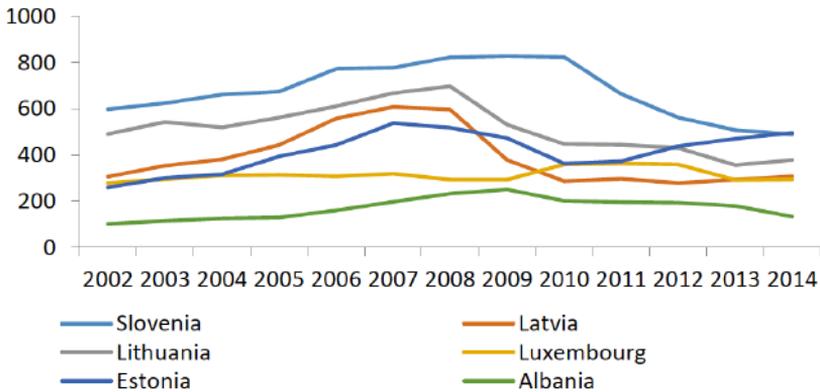


Source: SIPRI 2015.

At the same time, the document clarifies the plan of the armed forces modernization and defines important acquisition projects, which influence Turkish military expenditure. Like expenditure in other NATO and EU member states, Greek military expenditure was influenced by the consequences of the economic crisis leading to restructuring of the Greek armed forces, reducing the number of soldiers within the country as well as those deployed in foreign missions (e.g. in Kosovo), or reducing the required military engineering purchases.

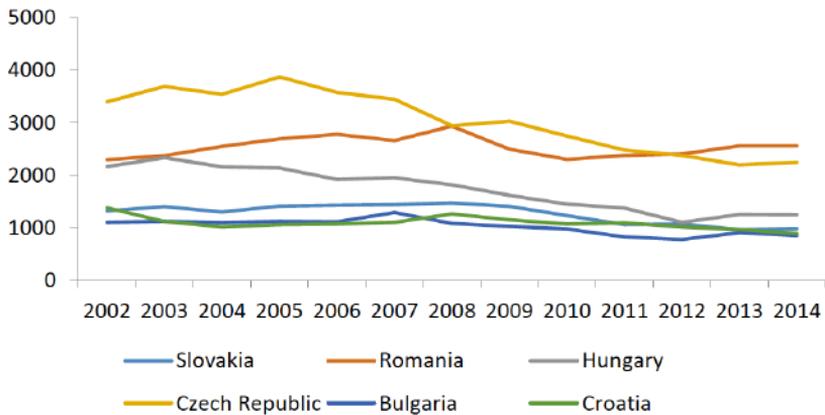
Determinants of military expenditure of new NATO member states were influenced by a number of political events in the early nineties leading to transformation of society and national economies from centrally planned to market ones. The process of restructuring of the armed forces has become a real determinant of military expenditure. The importance of restructuring lies in e.g. reducing the number people and military engineering in use, transfer to the professional army systems, modernization of armies, a pressure on increasing mobility of armed forces and the resultant participation of NATO member states in foreign operations (e.g. the KFOR). New NATO member states represent a group of countries to have come through complicated transformation processes leading to reducing the military expenditure of former Warsaw Pact member states in their short history. The military expenditure growth of these countries is especially evident at the time of their entering the Alliance when the states were trying to keep their military expenditure at 2% of the GDP. Causes like decreasing speed of the GDP, growing unemployment in these economies and the related social policy support priorities of local governments growing state budgets deficits, lead these countries to reduce the military expenditure which fell well under the recommended 2% of the GDP in many states.

Figure 4. Trends in military expenditure in Slovenia, Latvia, Lithuania, Luxembourg, Estonia and Albania (in million \$, at constant 2011 prices)



Source: SIPRI 2015.

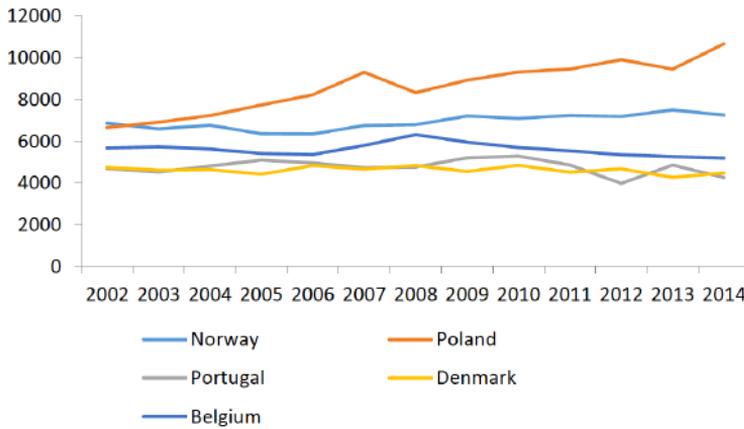
Figure 5. Trends in military expenditure in Slovakia, Romania, Hungary, Czech Republic, Bulgaria and Croatia (in billion \$, at constant 2011 prices)



Source: SIPRI 2015.

The development of military spending (Figures 1-6) confirms the existence of disparities between traditional NATO member states and new member states. Non-homogenous groups of states forming the current alliance thus invest different amounts of military spending in securing the state's defence in accordance with the state's economic condition. To prove the existence relationship between economic condition (economic determinants) and the level of military spending authors employ correlation analyses used in the third part of this paper.

Figure 6. Trends in military expenditure in Norway, Poland, Portugal, Denmark and Belgium (in billion \$, at constant 2011 prices)



Source: SIPRI 2015.

## 1. The determinants of military spending

There is now a large empirical literature devoted to description of military spending. Empirical studies (e.g. Sezgin, Yildirim 2002; Dunne, Nikolaidou 2001) aimed at identifying military spending determinants classify those determinants into groups of *economic factors* and *strategic factors*.

According to Bel and Elias–Moreno (2009), GDP, economic growth and foreign trade belong to *economic variables*. With using the GDP as an indicator of the economic power of the given country, the studies do not prove uniformity in the results as to its estimated importance as a military expenditure determinant. In turn, Dunne et al. (2003a, 2003b) point out its statistic unimportance. As opposed to this, other studies (e.g. Dunne 2008) prove its significant influence on the amount of military spending. It is possible to observe similar ambiguous results with the balance of trade indicator (Dunne, Perlo-Freeman 2003).

According to Bel and Elias-Moreno (2009), *strategic variables* are represented by variables describing the participation of the analyzed countries in armed conflicts like war or via perceiving the existing internal and external threats. In turn, Dunne and Perlo-Freeman (2003) state that it is possible to expect a positive effect of the above mentioned strategic variables on the amount of military expenditure, which grows in times of wars or intensive threats. A potential conflict threat worked as one of the determinants of Turkish military expenditure, which is a topic of Sezgin's and Yildirim's study analysing military expenditure of Turkey in 1951-1998. For the empiric analysis itself, Sezgin and Yildirim (2002) analysed variables coming out of the Greek military expenditure model published by Dunne and Nikolaidou (2001) determined by the amount of GDP, population, amount of non-military part of the state budget,

economy openness, military expenditure of the Alliance member states, and the amount of military expenditure of potential enemy states. The result of the cointegration model is finding out that within the time of the analysis, the Turkish military expenditure was dependent mainly on the amount of military expenditure of the Alliance member states and on the amount of military expenditure of potential enemy states. Similar variables characterizing determinants of military expenditure were used by Nikolaidou (2008) to characterize factors influencing the amount of military expenditure of 15 EU member states. The author extends previous studies defining determinants of military expenditure like military, economic, political or bureaucratic factors. Military factors of expenditure thus represent especially the development of military expenditure of enemy states and Alliance partners, economic factors represent the influence of GDP and the influence of price changes in the given economy. Political factors define the influence of defence industrial bases and interest parties influence the amount of military expenditure. Bureaucratic factors then describe the influence of the bureaucratic apparatus on the amount of defence budget. Similarly, Bel and Elias – Moreno (2009) described the relationship between the amount of military expenditure and the form of government (parliamentary, presidential form of government) or voting systems (majority, proportional) in 157 selected states. The overall number of variables was divided into three categories describing military expenditure determinants. The first group, marked as threat contains variables describing civilian war risks, previous participation of countries in armed conflicts and participation of the country in a certain type of Alliance. The second group of variables, marked as socioeconomic factors contains variables like the amount of GDP per inhabitant and the total population of the analysed country. The last group of institutional factors contains variables like the quality of democracy, voting system, form of government, ideology. The results of military expenditure analysis of 156 states in 1988-2006 proved that there is a relationship between the form of government and the amount of military expenditure, when states with the presidential form of government allocate bigger amount of military expenditure for the needs of defence than states with a parliamentary form of government.

Economic variables generally defined by several authors (e.g. Sezgin, Yildirim 2002; Bel, Elias-Moreno 2009; Dunne, Nikolaidou 2001; Nikolaidou 2008) as economic determinants of the military spending will be quantified in the next part of this paper and they will be used as input data for investigating the relationship between economic determinants and military spending.

## 2. Empirical results

To prove the existence link between economic determinants and the level of military spending authors employ correlation analysis. To quantify the economic performance of selected NATO countries, authors selected data from

World Bank database<sup>1</sup>. The economic variables are defined as follows: growth (GDP growth – annual %), inflation (consumer prices – annual %), deficit (Cash surplus/deficit – % of GDP), debt (Central government debt, total – % of GDP).

To quantify military expenditure, authors used military burden measure (military expenditure as a share of gross domestic product) from SIPRI database. The SIPRI definition of military expenditure includes all current and capital expenditure on the following activities: the armed forces (including peace-keeping forces), the civil administrations of the military sector (defense ministries and other government agencies engaged in defense activities), paramilitary forces (non-regular armed forces which are judged to be trained, equipped and available for military operations) and military space activities. Such expenditure should include the following components: personnel, operations and maintenance, arms procurement, military research and development (R&D), military construction and military aid (in the military expenditures of the donor country. The empirical results are given in Table 1.

Using the correlation analysis (Pearson’s coefficient) authors prove that a positive link between economic growth and military expenditure has been identified in 5 countries<sup>2</sup> (Germany, Greece, Italy, Norway, and the Netherlands) and come to the conclusion that economic development positively determines their military expenditures, i.e. the economic development is a one from factors influencing the level of their military spending. Surprisingly, the ‘debt effect’ of defence (captured by the negative significant coefficient) applies only to the case of the Czech Republic, Germany, France, Greece, Hungary, Lithuania, Luxembourg indicating that in these countries increases in government debt lead to cuts in defence spending. Deficit has a significant positive coefficient in the case of Croatia and Romania suggesting that deficit will tend to decrease military spending. For most of the countries, there is a significant positive effect of inflation on military spending suggesting that increases in price level lead to increases in military spending. Similar findings have been identified by Spearman correlation coefficient (Table 1).

Table 1. Pearson’s and Spearman’s correlation coefficients (significance level codes: \*\*\* 0.01, \*\* 0.05, \* 0.10)

State	Pearson’s correlation coefficient				Spearman’s correlation coefficient			
	dept	deficit	GDPgrowth	inflation	dept	deficit	GDPgrowth	inflation
ALB	-0.717	-0.357	-0.492 **	0.902 ***	-1.000 *	0.071	-0.111	0.448 **
BEL	0.944 ***	-0.056	0.160	0.334	0.816 ***	-0.034	0.202	0.188

<sup>1</sup> Data are not completely available for all countries in the analysed period 1993–2014. It causes different significance of correlation coefficients.

<sup>2</sup> Significance level 0.10.

## Military spending and the economy

BGR	-0.745		-0.168		-0.316		0.114		-0.800		-0.136		-0.116		0.445	**
CAN	0.646	***	-0.904	***	-0.415	**	0.332		0.468	**	-0.710	***	-0.295		-0.043	
CZE	-0.791	***	0.315		0.284		0.404	*	-0.602	***	0.235		0.275		0.279	
GER	-0.558	**	-0.517	**	0.344	*	0.669	***	-0.736	***	-0.364		0.184		0.163	
DNK	0.906	***	-0.424	*	0.293		0.206		0.886	***	-0.346		0.361	*	0.255	
ESP	0.343		-0.194		0.205		0.753	***	0.381		-0.201		0.228		0.695	***
EST	-0.104		-0.040		-0.421	*	-0.657	***	0.075		-0.011		-0.349		-0.624	***
FRA	-0.600	***	-0.039		0.111		0.461	**	-0.680	***	-0.003		0.237		0.355	*
GBR	0.009		-0.381		-0.304		0.736	***	0.327		-0.463	*	-0.178		0.446	**
GRC	-0.529	**	0.396		0.362	*	0.659	***	-0.410	*	0.637	***	0.162		0.633	***
CRO	-		0.498	**	0.359		0.509	**	-		0.271		0.439	*	0.742	***
HUN	-0.690	***	-0.451	*	0.030		0.794	***	-0.744	***	-0.352		0.159		0.778	***
ITA	0.065		0.355		0.358	*	0.550	***	-0.018		0.364		0.280		0.481	**
LTU	-0.940	***	0.392		0.102		-0.246		-0.683	*	0.308		0.274		-0.432	**
LUX	-0.634	**	0.352		0.254		0.315		-0.636	**	0.138		0.187		0.199	
LVA	0.452		-0.048		0.135		-0.250		0.825	***	-0.049		0.304		-0.149	
NLD	0.439	*	-0.293		0.349	*	-		0.255		-0.063		0.495	**	-	
NOR	-0.163		-0.792	***	0.458	**	0.278		-0.121		-0.720	***	0.486	**	0.260	
POL	-		-		-0.155		0.700	***	-		-		0.275		0.598	***
PRT	0.324		-0.468	**	0.070		0.718	***	0.568	**	-0.647	***	-0.012		0.451	**
ROU	0.000	***	0.762	***	-0.562	***	0.776	***	0.000	***	0.882	***	-0.250		0.941	***
SVK	-0.422		0.431		0.313		0.497	**	-0.345		0.321		0.413	*	0.642	***
SVN	-0.817	*	-0.044		-0.001		0.560	***	-1.000	**	0.158		0.158		0.303	
TUR	0.866	*	-0.982	***	-0.097		0.905	***	0.600		-0.900	*	0.002		0.860	***
USA	0.802	***	-0.915	***	-0.486	**	0.267		0.846	***	-0.813	***	-0.491	**	0.276	

Source: own elaboration.

## Conclusions

The relationship between military spending and economic development is a controversial area of National Defence Economy. Generally, this relationship was examined by many authors but the studies did not reveal uniformity among empirical results. To identify possible links between two the mentioned variables in selected NATO states the authors employ correlation analysis. The time series were chosen from the SIPRI and World Bank database and characterized for the time period from 1993 to 2014. From the empirical results we can conclude that positive link between economic growth and military expenditure has been identified in 5 countries (Germany, Greece, Italy, Norway, and the Netherlands), negative link between debt and military expenditure in 7 countries (Czech Republic, Germany, France, Greece, Hungary, Lithuania, Luxembourg),

positive link between deficit in 2 countries (Croatia and Romania) and for most of the countries, there is positive effect of inflation on military spending.

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